

This chapter presents an overview of Viva Energy's sustainability approach and commitments and summarises how these sustainability principles have been incorporated into the design and development of the Viva Energy Gas Terminal Project (the project).

"The EES needs to provide a clear, objective and wellintegrated analysis of the potential effects of the proposed project...Overall, the main report needs to include... evaluation against the principles and objectives of ecologically sustainable development."

## 15.1 Overview

Section 3.2 of the Environment Effects Statement (EES) scoping requirements states the following:

This chapter responds to the ecologically sustainable development (ESD) component of this requirement and describes how the project aligns with the core objectives and principles of ESD.



#### 15.1.1 Sustainable development

The concept of sustainable development was described by the 1987 World Commission on Environment and Development report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". In 2016, the definition was updated to define sustainable development as meeting the needs of the present "in ways that are not at the expense of future generations, yet more inclusively".

The 'Brundtland Report' as the document came to be known, named after the Commission's chairwoman, created the three interdependent 'pillars' of sustainability: social, economic and environmental, and developed guiding principles for sustainable development as it is generally understood today.

In 2015, the United Nations (UN) General Assembly adopted the Sustainable Development Goals (SDGs), as an interlinked set of 17 global goals. These are also referred to as Agenda 2030. The 17 SDGs address the most important global challenges that we face. They and provide a general framework to guide public, private and civil society sectors on how to ensure their activities advance sustainable development.

The means by which Viva Energy is contributing to the achievement of the SDGs is further discussed in **Section 15.2.1** of this chapter. Viva Energy recognises that the oil and gas industry has contributed to some of the challenges that the SDGs seek to address, such as climate change, and acknowledges that it has a responsibility to minimise emissions and participate in the lower carbon energy transition. Viva Energy's climate change commitments are described in **15.2.2**. The most relevant SDGs related to the project include:

- SDG 7 (Affordable and clean energy) and SDG 13 (Climate action)
- SDG 12 (Responsible consumption and production)
- SDG 14 (Life below water) and SDG 15 (Life on land).

Consideration of the relevant SDGs in key aspects of the project have been acknowledged in **Section 15.3.1**.

#### 15.1.2 Ecologically sustainable development

The Commonwealth Government's National Strategy for Ecologically Sustainable Development (1992) defines ESD as:

"...using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased"

ESD is development that aims to meet the needs of Australians today while conserving our ecosystems for the benefit of future generations. To achieve this, there is a need to develop ways of using environmental resources which form the basis of our economy in a way which maintains and, where possible, improves their range, variety and quality. Simultaneously, those resources need to be utilised to develop industry and generate employment.

The core objectives and guiding principles for the National Strategy for ESD are outlined in **Table 15-1**. These align with the guiding principles to be considered according to the *Commissioner for Environmental Sustainability (CES) Act 2003* (Vic), as referenced in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978 (Vic).* 



Table 15-1 ESD core objectives and guiding principles

#### **ESD** objectives

- To enhance individual and community well-being and welfare, by following a path of economic development that safeguards the welfare of future generations
- To provide for equity within and between generations
- To protect biological diversity and maintain essential ecological processes and life-support systems

#### ESD principles

- Decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations
- Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- The global dimension of environmental impacts of actions and policies should be recognised and considered
- The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised
- The need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised
- Cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentive mechanisms
- Decisions and actions should provide for broad community involvement on issues which affect them

**Section 15.4** of this chapter evaluates the project in the context of the ESD objectives and principles to demonstrate how the project has considered sustainability in its design.

# 15.2 Viva Energy's sustainability approach

Viva Energy's purpose is to help people reach their destination by supplying the energy its customers and business partners need in order to go about their daily lives or run their businesses, and to also provide rewarding and fulfilling roles for its employees. Viva Energy's objective is to achieve this in a way that contributes to positive sustainability outcomes, and is aligned with its company values of integrity, responsibility, curiosity, commitment and respect.

Sustainability is at the core of Viva Energy's Business Principles which commit to balancing short-term needs and interests with those of future generations and integrating economic, environmental and social considerations into business decision making processes. This is consistent with Viva Energy's Geelong Energy Hub strategic vision which would see the Geelong Refinery site being utilised to diversify and support Victoria's energy transition to renewables. Viva Energy's Business Principles and Code of Conduct is available at:

#### www.vivaenergy.com.au/corporate-governance/ Business Principles and Code of Conduct

Viva Energy's latest Sustainability Report provides detail of its sustainability approach, initiatives and performance in the context of its sustainability focus areas: www.vivaenergy.com.au/sustainability

Viva Energy's annual sustainability reporting aligns with the Global Reporting Initiative Standards (GRI Standards) with the aim of providing transparent reporting on its contribution and commitment to sustainable development.

#### 15.2.1 Sustainability focus areas

Viva Energy recognises that its business can contribute to sustainable development in a number of ways, either by enhancing positive contributions or by avoiding or mitigating negative impacts. This includes providing access to affordable energy; opportunities for fulfilling employment; business and skills development; investment in its communities; substantial tax contributions; improved energy and transport infrastructure; managing the impacts of its operations by protecting the environment, health and safety, and human rights.

Viva Energy's sustainability focus areas are summarised in **Table 15-2** below. These represent the most material environmental, social and governance (ESG) risks and opportunities that impact its business and stakeholders, as determined through materiality assessment and stakeholder engagement. The relevant SDGs are mapped against each sustainability focus area.

#### Table 15-2 Viva Energy's sustainability focus areas

Focus area	Description	UN SDGs
Health & safety	Pursuing "Goal Zero" performance in the health, safety and well-being of our employees, contractors, customers and community. The health, safety and wellbeing of our employees are fundamental to our business.	3 GOOD HEALTH AND WELL-BEING
Making the low carbon energy transition	Addressing the greenhouse gas and energy intensity of our own operations, supporting our customers achieving their carbon reduction aspirations, and positioning for the low carbon energy transition.	7       AFFORDABLE AND CLEAN ENERGY       9       INDUSTRY, INNOVATION         9       AND INFRASTRUCTURE       Image: Comparison of the compari
Environment	The protection of the natural environment and resources through management and continual improvement of our environmental performance.	6 CLEAN WATER AND SANITATION TO AND SANITATION AND PRODUCTION
		14 UFE BELOW WATER 15 UN LAND
Our people	Our ability to attract, motivate and develop high calibre people enables us to deliver outstanding business results today and into the future.	3 GOOD HEALTH AND WELL-BEING 
		5 GENDER EQUALITY S EQUALITY S ECONOMIC GROWTH S ECONOMIC GROWTH

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Focus area	Description	UN SDGs
Our community	Our community programs are dedicated to making a positive social impact and building strong relationships through engagement.	4       QUALITY       8       BECENT WORK AND         10       REDUCATION       11       SUSTAINABLE CITIES         10       REQUALITIES       11       SUSTAINABLE CITIES
Ethical conduct and transparency	Maintaining strong corporate governance and transparency, and respecting human rights in accordance with our values and Code of Conduct. Being accountable to our stakeholders for our financial and sustainability performance.	16 PEACE, JUSTICE AND STRONG INSTITUTIONS
Economic contribution	The significant economic contribution through the products we supply, the employment we generate, the local suppliers we support, the returns we provide to investors and the taxes we pay. We are a key contributor to Australia's energy security and underpin every sector of the economy.	8 DECENT WORK AND ECONOMIC GROWTH INDUSTRY, INNOVATION

The project is part of Viva Energy's broader commitment to diversify operations at the Geelong Refinery, provide a secure supply of gas to meet demand in south-east Australia and create sustainable operations for continued economic development in the region.

Viva Energy's robust governance is designed to ensure risks are managed and business is conducted in an ethical and transparent way. The EES process has enabled measures to be identified that avoid, minimise and manage impacts on the community and the environment, to align with Viva Energy's sustainability approach and focus areas.

Viva Energy is also focused on reducing greenhouse gas emissions and participating in the low carbon energy transition to mitigate the effects of climate change, as described in the following sections.

#### 15.2.2 Climate change commitments

Viva Energy recognises the complex global challenge posed by climate change. The company supports the objectives of the Paris Agreement on climate change and Australia's commitment to it and supports the policies and action that will help Australia meet its emissions reduction commitments.

In the coming decades, Australia's economy needs to shift to a lower carbon intensity. Viva Energy is committed to minimising emissions, and in playing a key role in the low carbon energy transition.

Traditional energy such as liquid petroleum fuels are expected to play a critical role and provide energy security in Australia's economy as the transition occurs, but Viva Energy recognises that demand for these traditional fuels will reduce over time. The company's approach to the energy transition is to support its customers to reduce their greenhouse emissions, pursue opportunities in emerging and transitional lower carbon energies, and reduce its own operational emissions. Viva Energy has considered the risks and opportunities associated with climate change under a range of plausible climate transition scenarios to understand the climate resilience of its business and inform its corporate strategy. To help guide its approach in this area, and provide transparency to stakeholders, the company has adopted the recommendations of the Taskforce on Climaterelated Financial Disclosures (TCFD), a voluntary framework for climate-related disclosures.

Some of the opportunities Viva Energy is pursuing in the low carbon energy transition include:

- Electric vehicle charging trials on selected service stations in partnership with Evie Networks.
- Hydrogen for transport refuelling opportunities, through a strategic alliance with Hyzon Motors, a global supplier of hydrogen fuel cell technology for commercial vehicles.
- Solar energy farm alongside Geelong Refinery to power some of the refinery electricity needs.
- Landfill biomethane gas opportunities through a strategic alliance with Waga Energy, the European leader in biomethane gas recovery from landfill waste.
- Biofuels blending and distribution capability in its existing fuel distribution network.
- Circular economy processing trials to expand Geelong Refinery's processing capability to bio and synthetic waste feedstocks such as recycled plastics.
- Carbon neutral fuels certified through the Australian Government Climate Active program – an example of this is a new carbon neutral jet fuel product, Carbon Neutral Jet A-1.

Viva Energy is also focused on improving the energy efficiency and emissions intensity of its own operations.

Over the medium term, Viva Energy is targeting net zero Scope 1 and 2 emissions across retail, fuels and marketing (all non-refining parts of the business) by 2030. At the Geelong Refinery, Viva Energy is committed to a 10% reduction in emissions intensity by 2030. Over the longer term, Viva Energy has the ambition to reach net zero Scope 1 and 2 emissions across all operations by 2050. Viva Energy plans to achieve these emissions reduction goals through a range of enablers, including:

- Designing out emissions on new projects such as the Gas Terminal Project.
- Improving energy efficiency through operational optimisation and energy improvement projects for its operations.
- Sourcing renewable electricity for its operations through investment in renewable projects such as the proposed Geelong Solar Farm, and renewable electricity purchasing.
- Offsetting residual emissions by investing in carbon offset projects and purchasing offsets sourced from certified offset schemes.

For the Gas Terminal Project, Viva Energy has committed to net zero Scope 1 and 2 emissions for the life of the project, by offsetting the emissions from the construction phase and over the operational life of the project. Viva Energy has also committed to a range of mitigation measures to avoid and reduce emissions during the construction and operation of the terminal, as outlined in Chapter 9: Greenhouse gas emissions and Technical Report C: Greenhouse gas impact assessment.

These commitments for the Gas Terminal Project reflect Viva Energy's approach to new projects where a sustainability lens has been brought to all aspects of this project's development and, where possible, carbon emissions have been designed out of the operations, and a net zero approach adopted from its commencement.

#### 15.2.3 Geelong Energy Hub

The Geelong Energy Hub is a key part of Viva Energy's strategic vision to participate in the low carbon energy transition. The Geelong Energy Hub vision to deliver long-term energy security allows for a clear path for transitioning the local economy towards a renewable future.

The Geelong Energy Hub is intended to allow Viva Energy to build a sustainable operation to continue local manufacturing and supply existing and future energy products to meet the needs of its customers and the economy. The project, as well as Viva Energy's broader Geelong Energy Hub vision, would strengthen the viability of the refinery site into the future and enhance positive social outcomes by protecting and generating local jobs, retaining a skilled workforce and supporting economic development in the region. The broader Geelong Energy Hub vision is focused on exploring opportunities in transition fuels (such as liquefied natural gas (LNG)), alternative fuels, and renewable energy and emission reduction projects at the Geelong Refinery. Projects include the Gas Terminal Project, the development of strategic storage to improve fuel supply security and potentially a solar energy farm and projects to support alternative fuels such as biofuels and hydrogen.

These potential projects would:

- Bring a cost effective and flexible supply of gas from where it is produced to where it is needed
- Support the development of infrastructure for alternative energy sources
- Support renewable power generation and help reduce the refinery's carbon footprint
- Help to support existing jobs as well as generate new jobs and stimulate economic development in the region.

The Geelong Energy Hub would enable Viva Energy to continue to provide fuels and energy needed in the transport, aviation, industrial, residential and marine sectors for many years to come.

# 15.3 Embedding sustainability in the project design

Sustainability was established as a key driver for the project design in line with Viva Energy's commitment to operating a sustainable business.

To support this, the engineering and design contractor applied a Safe and Sustainable Engineering for Asset Lifecycle (SEAL) approach to the design, delivered with the support of two sustainability leads working within the engineering design team and ensuring that sustainability was a key consideration during design and the decisionmaking process.

Sustainability was embedded into the design and the decision-making process through a number of activities summarised in **Table 15-3** below.

Table 15-3	Key activities	in embedding	sustainability into	o desigr
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Activity	Detail
Workshops & regular meetings	Sustainability subject matter experts participated in weekly or regular meetings.
Value Improvement Practices (VIP)	A process that encourages innovation, maximises opportunities to optimise design or to generate, screen and pursue value-adding ideas.
Decision support	Sustainability considerations were embedded into the design decision- making process.
Sustainability in procurement	Sustainable procurement processes established to identify potential sustainability benefits through responsible purchasing.
Approvals support	Sustainability representatives supported the integration of the design and EES teams and gave input to relevant aspects of the EES including the climate risk assessment and this chapter.

# 15.3.1 Key opportunities for sustainability and to reduce environmental impacts

Key opportunities to embed sustainability in the project and to reduce environmental impacts were identified during the project's conceptual phase and refined during the EES process. Where these align with the UN SDGs, this has been noted below.

The project is transitional and capable of supplying a secure and flexible new source of gas for the south-east Australian gas market where there is a projected supply shortfall in coming years without the need to build long-term large-scale gas infrastructure. This would provide reliable and affordable energy, which is one of the key enablers of sustainable development (SDG 7), while acknowledging the need to transition away from fossil fuels in the long-term.

The use of a floating storage and regasification unit (FSRU) in the industrialised setting of Refinery Pier avoids the construction of large onshore gas infrastructure (and subsequent potential amenity and environmental impacts) which would later require decommissioning and attendant energy use when gas is no longer required. This would avoid the need to clear vegetation on greenfield sites (SDG 15) and supports the transitional nature of the project. At the end of the project life, the FSRU (which is a repurposed LNG carrier and would remain a seafaring vessel) would have the potential for alternate use elsewhere and would depart the port without any decommissioning requirements. Sustainable procurement and potential re-purposing of the FSRU and project infrastructure is an important aspect of Viva Energy's sustainability goals (SDG 12).

The pipeline component of the project would involve a 3 km aboveground pipeline section and a 4 km underground pipeline section. The pipeline route was selected to minimise use of greenfield sites and to minimise impacts on sensitive land uses. The aboveground section would run along existing pipe track on Refinery Pier and within the refinery, and the underground section is predominantly located within or adjacent to already disturbed easements or licensed road reserve areas held by Viva Energy within the existing infrastructure corridor which would avoid the need to clear a significant amount of native vegetation (SDG15). A significant benefit of situating the FSRU adjacent to the Geelong Refinery is the opportunity to leverage the refinery's existing cooling water infrastructure in Corio Bay. The project would allow for re-use of the seawater discharge from the FSRU within the Geelong Refinery avoiding the need for two separate water intakes and discharges were the project and the refinery to operate independently. Further, discharge of the recycled water through the existing refinery discharge points would result in the temperature of the existing refinery seawater discharge being reduced and closer to ambient conditions within the mixing zone. This synergy with existing operations would enable the project to reduce the impact of the FSRU seawater discharge on the marine environment (SDG 14).

Viva Energy plans to operate the FSRU primarily in "open loop mode", a process that uses seawater to warm up and regasify LNG rather than fuel-burning heaters. As a result, greenhouse gas emissions would be approximately four times less than the alternative "closed loop" scenario. In addition, as noted in **Section 15.2.2**, Viva Energy has committed to a range of mitigation measures to reduce greenhouse gas emissions (SDG 13) including the major commitment to offsetting the residual Scope 1 and 2 construction and operational emissions associated with the Gas Terminal Project.

A full list of the environmental commitments for the project is provided in Chapter 14: *Environmental Management Framework*. Specific processes and environmental outcomes of the SEAL approach to the design are described in the following sections.

#### 15.3.2 Value Improvement Practices (VIP)

Value Improvement Practices (VIP), also known as Value Engineering, is an approach to engineering design which encourages constant innovation, opportunities to optimise design or opportunities to generate and pursue ideas that may bring value (defined by the project drivers) to the project.

As part of the front-end engineering design (FEED), a VIP register was developed and progressed by the engineering and design contractor and Viva Energy's project teams. The engineering and design contractor's project manager was custodian of this VIP register and fortnightly workshops were held throughout the FEED to screen, update and progress each of these improvement ideas.

At the end of the FEED, 101 VIP ideas were generated. Of those, 60 were identified as having positive sustainability outcomes. Refer to **Table 15-4** below for a list of the most noteworthy VIP ideas (relating to sustainability) closed during the FEED.

Table 15-4	Key Value Improvement Practices identified
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VIP title	Summary
Dredge optimisation	Detailed navigation assessments performed during FEED found that the total required dredge volume could be reduced from the pre-FEED base-case of 1,100,000 m <sup>3</sup> to 490,000 m <sup>3</sup> . This results in significant sustainability benefits, including:
	<ul> <li>Reduced emissions (release of carbon) from disturbed sediment due to the smaller footprint</li> </ul>
	<ul> <li>Emissions savings from shortened duration of dredge operations, reduction in amount of fuel required for dredge vessels</li> </ul>
	<ul> <li>Reduced impacts on marine environment from shortened duration of dredge operations</li> </ul>
	<ul> <li>Reduced footprint of seabed disturbance</li> </ul>
	<ul> <li>Reduced turbidity and dredge plume</li> </ul>
	Reduced impacts associated with spoil disposal.
Locally sourced liquid nitrogen (LIN)	LIN requirements would be inconsistent as the richness of LNG received would vary; however, the general indication is that sourcing LIN from local sources produces approximately 5% of the emissions associated with trucking from New South Wales, with an emissions saving of roughly 3.2 metric tons of carbon dioxide equivalent (tCO2-e) per trip.
Equipment elimination	The following items have been eliminated from the project through design optimisation, driven by minimising the materials needed for the project:
	Permanent pigging facilities
	• Trim heaters
	Gas filters
	<ul> <li>Platform for maintenance of marine loading arms (MLAs).</li> </ul>
	This results in savings on material and associated embedded emissions.
Wildlife sensitive lighting design	Lighting at the pier would be designed to comply with the National Light Pollution Guidelines for Wildlife where compliant with regulatory requirements, safe and practicable. Sustainability benefits of environmentally sensitive lighting design include:
	<ul> <li>Minimising impacts to existing ecosystems (most notably local and migratory seabirds)</li> </ul>
	<ul> <li>Energy savings and reduced greenhouse gas emissions.</li> </ul>
Potential to send excess FSRU boil off gas (BOG) to refinery	During low gas export periods from the FSRU to the gas treatment facility (<100 million standard cubic feet per day (mmsfcd)), the FSRU could produce more BOG than it requires for power. The project would investigate sending excess BOG to the refinery for use in the fuel gas system, which could displace the amount of natural gas being used in the refinery and by not venting the excess BOG to atmosphere, lower greenhouse gas emissions.

#### 15.3.3 Decision support

Sustainability considerations were evaluated for key engineering decisions throughout the FEED. Sustainability was evaluated for decisions through a screening process developed specifically for this project, called the sustainability difference assessment (SDA). The SDA is a process whereby options are assessed against several sustainability categories, including:

- Management and governance
- Using resources
- Emissions, pollution and waste
- Ecology
- People and place
- Innovation.

A summary of the outcomes of these assessments is presented in **Table 15-5** below.

Table 15-5	Sustainability conclusions and	d outcomes of decisions	made during the FEED study
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Decision title	Options	Sustainability conclusion/outcome
Nitrogen system	<ul> <li>Option 1: Install storage that meets early demand years of 1200 tonnes and truck all nitrogen in on an as needs basis</li> <li>Option 2: Install storage of 3000 tonnes and truck all nitrogen in on an as needs basis</li> <li>Option 3: Install an Air Separation Unit (ASU) to generate nitrogen on site with a small amount of storage. No trucking import of LIN, but export of LIN and liquid oxygen (LOX)</li> </ul>	<ul> <li>Option 1 selected.</li> <li>Positive outcomes:</li> <li>Less noise, light and potential for air pollution</li> <li>Less waste (treated chlorine)</li> <li>Less resource/material use</li> <li>Lower operational emissions</li> <li>Decreased visual impact.</li> <li>Negative outcomes:</li> <li>Trucking emissions – addressed in the VIP item on reducing transport emissions through local LIN sourcing (Section 15.3.2)</li> </ul>
Pier head concept	<ul> <li>Option 1: Full implementation of the pier head platform structure (MLAs, hose stations, gangways, etc.)</li> <li>Option 2: Phased development of the pier head platform structure/moorings (MLAs, hose stations, gangways, etc.)</li> </ul>	<ul> <li>Option 2 selected.</li> <li>Option 2 presents several sustainability advantages over Option 1, including:</li> <li>Delayed carbon emissions (embodied and direct)</li> <li>Lower noise/vibration due to phased approach</li> <li>Shorter construction durations and potentially less community impact.</li> </ul>

Decision title	Options	Sustainability conclusion/outcome	
Pipeline size	<ul> <li>Option 1: 500mm diameter gas pipeline, metering &amp; associated packages</li> <li>Option 2: 600mm diameter gas</li> </ul>	Option 2 selected. Minor sustainability differences between the two options:	
	pipeline, metering & associated packages	<ul> <li>Option 1 = larger trim heater (higher direct emissions)</li> <li>Option 2 = more materials (higher embodied emissions)</li> </ul>	
		Although Option 2 requires more material for the pipeline, it was the selected option as it enabled the design team to explore the option of removing the trim heater. Further investigation and design resulted in the removal of the trim heater (reduced direct emissions). In addition, Option 2 can achieve the required throughput at a pressure that is consistent with the broader gas network and therefore requires less additional equipment to increase and/or decrease pressure.	
LIN tank	• Option 1: Flat bottom tanks	Option 2 selected.	
selection	<ul> <li>Option 2: Vacuum insulated vessels</li> </ul>	Option 2 (vacuum insulated tanks) presents several sustainability advantages over Option 1 (flat bottom tanks).	
		These include:	
		<ul> <li>Less energy consumption as nitrogen purging system is not required</li> </ul>	
		<ul> <li>Less concrete materials required for small support pedestals (however, possibly offset by the greater steel quantity required)</li> </ul>	
		<ul> <li>Lower noise/vibration as nitrogen BOG compressor may not be required</li> </ul>	
		<ul> <li>Shorter construction duration and potentially less community impact</li> </ul>	
		<ul> <li>Lower visual profile, therefore less potential community amenity impacts</li> </ul>	
		Lower light emissions (lighting at lower height)	
		<ul> <li>Less potential for disturbance of groundwater (shallower foundations).</li> </ul>	
Nitrogen	• Option 1 – Do nothing (i.e., vent	Option 3 selected.	
BOG compressor study	<ul> <li>nitrogen BOG to atmosphere)</li> <li>Option 2 – Install oil lubricated reciprocating compressor</li> <li>Option 3 – Install oil free piston compressor</li> </ul>	Although additional equipment is required, Option 3 was preferred as it:	
		<ul> <li>Mitigates venting of nitrogen to the atmosphere thus reducing the product loss as well as the discharge</li> </ul>	
		<ul> <li>Has no oil filtration system downstream which minimises the maintenance effort, eliminates any potential oil spill to the ground and keeps the nitrogen system dry.</li> </ul>	

Decision title	Options	Sustainability conclusion/outcome
Pier extension power supply	<ul> <li>Option 1: Utilise existing low voltage (LV) switchboard in jetty gatehouse</li> <li>Option 2: Replace LV jetty gatehouse switchboard</li> <li>Option 3: New ring main unit adjacent to substation 13</li> <li>Option 4: Refurbish HT Aux1 feeder</li> <li>Option 5: Extend HT Aux1 switchboard</li> <li>Option 6: Replace saltwater (SWPH2) substation</li> <li>Option 7: Provide backup diesel generator at the jetty</li> <li>Option 8: Provide new high voltage (HV) power supply from the street side (Powercor)</li> </ul>	Options 1, 3, 4, 5 and 8 are comparable for sustainability considerations. Options 2 and 6 are slightly more impactful as they will require the disposal of components being replaced or upgraded. Option 7, which is to install a diesel generator, will have the most significant sustainability impact. This option will not be progressed. Option 5 was selected as the basis of design for the FEED of the project.
Pier extension lighting design	<ul> <li>Option 1: Base case lighting design ('do nothing' case)</li> <li>Option 2: Modify base case lighting design to align with recommendations in the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds.</li> </ul>	<ul> <li>The following measures were recommended and selected for implementation.</li> <li>Minimise pole height to as low as practicable along jetty road, nominally 6m.</li> <li>Maintain lux levels of 40-50 lux across jetty head with additional task lighting as required.</li> <li>Pole height minimised to as low as practicable at jetty head, nominally 10-12m.</li> <li>Install light shields to limit up-light on jetty head lighting, and jetty road lighting.</li> <li>Selection of lamps with a 3000 K (on the Kelvin scale) lamp colour temperature.</li> <li>Further investigation into operational controls.</li> <li>Sustainability benefits of environmentally sensitive lighting design include:</li> <li>Minimising impacts to existing ecology</li> <li>Energy and GHG emission savings</li> </ul>
LIN drainage system	<ul> <li>This consists of four discreet minor decisions:</li> <li>Major LIN spill containment and drainage</li> <li>Minor LIN spill containment and drainage</li> <li>Odorant containment</li> <li>Surface and drainage materials</li> </ul>	After assessment, the sustainability differentiators of this decision are found to be negligible (minor material quantities and construction footprint differences) and are secondary to the safety considerations which are main driver in this decision. More investigation is to be done on procuring sustainable options of surface and drainage materials.

### 15.3.4 Sustainability in procurement

This section describes how sustainability in procurement has been implemented for the early stages of the project.

Sustainable procurement ensures that ESG considerations are addressed within the supply chain, but also aims to identify and maximise potential sustainability benefits through responsible purchasing. Procurement is recognised as a key opportunity for enhancing project sustainability and has been considered at the early stages of the Gas Terminal Project to ensure vendors are aware of Viva Energy's sustainability ambitions for the project.

The processes established for sustainable procurement ensure that best practice options for procured goods are identified and implemented where relevant and practicable. As the supply chain for several work packages for the project are global, including the FSRU, international best practice and leading technologies can be integrated into the project. This means there is opportunity to capitalise on progress being made overseas on circular economy products or renewably powered equipment.

In addition to attracting international best practice to the Geelong region, sustainable procurement practices will prioritise local content, thereby providing economic development and ongoing skilled workforce opportunities for the region. Sustainable procurement practices include identifying and procuring sustainable options throughout the supply chain and creating links to the Geelong region, for example through adoption of:

- Circular products (recycled/recyclable)
- Low (or no) carbon-footprint materials (such as green steel or concrete)
- Leading low (or zero) emission technologies (such as electric powered vessels/vehicles or energy efficient options).

During the FEED, sustainability was introduced to potential vendors during the early inquiry phase. Early inquiries are typically informal email inquiries issued to selected suppliers to gauge their interest in supplying goods and/or services to the project, as well as seek high level, non-commercial information such as capabilities and experience. The purpose of incorporating sustainability into the early enquiries is to introduce sustainability as a key project driver, and to invite potential suppliers to consider how sustainability value can be delivered across their particular contract scope.

The following text has been included in initial inquiries with suppliers:

Viva Energy is committed to operating a sustainable business. This includes aligning with the UN Sustainable Development Goals. As such, sustainability is one of the key drivers for the Gas Terminal Project, across design, procurement, construction and operations.

In this early phase, Tenderers are required to (i) outline their policies and experience related to sustainability; and (ii) outline any potential ideas or initiatives to increase sustainability in the supply of the goods and/or services being offered.

Further information about each Tenderer's sustainability track record and proposed actions will be requested as part of the formal request for quotation phase.

https://www.vivaenergy.com.au/sustainability

In addition, a sustainability questionnaire has been developed to be included in formal requests for quotation or tender. This covers several aspects of sustainability including the potential vendor's:

- Corporate policy & governance structure
- Environmental management framework
- Local content and Aboriginal participation strategy
- Responsible supply chain management systems/ strategy
- Approach to monitoring and reporting.

An opportunity for vendors to outline any sustainability outcomes or initiatives that could apply to the specific contract was also included. Sustainability performance will be included as a portion of the tender evaluation criteria.

Sustainable procurement has potential to achieve significant sustainability outcomes for the project and is a strong lead indicator of future sustainability performance.

# 15.4 Evaluation of the project against ESD objectives

Viva Energy has demonstrated alignment with both the ESD objectives and principles by establishing a framework for embedding sustainability considerations throughout the project value chain and design, as discussed in **Section 15.3**. Adopting an integrated team approach between the approvals and engineering team, a culture of environmental and social performance and clear communication was established for the project. Environmental and social considerations were not only considered from a risk mitigation perspective, but also from a continuous improvement and value improvement perspective.

 Table 15-6 summarises how the project aligns with the ESD objectives and principles.

Table 15-6	Evaluation	of the project	against ESD	objectives	and principles
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ESD objectives	Project actions
To enhance individual and community well-being and welfare, by following a path of economic development that safeguards the welfare of future generations	The project is part of Viva Energy's vision to create the Geelong Energy Hub at the Geelong Refinery and to support the energy needs of Victoria and south-east Australia. LNG regasification facilities provide a flexible and competitive means of securing natural gas and would form an important part of Victoria's energy infrastructure mix, meeting gas demand for as long as gas is needed. The project would enable gas imports of up to 160 petajoules (PJ) per year to meet an expected shortfall in the south-eastern states of Australia by the mid-2020s and improve energy security and affordability by providing a new source of gas close to major demand centres. Refer to Chapter 2: <i>Project rationale</i> for further detail on how the project contributes to energy security in the south-eastern states of Australia.
	The project as well as Viva Energy's broader Geelong Energy Hub vision would strengthen the viability of the refinery site into the future and protect and generate local jobs for this generation and future generations, supporting economic development for the region. Over the two-year construction period, the project would provide up to 150 to 200 jobs and up to 50 to 70 ongoing jobs once the terminal is in full operation. Refer to Technical Report L: <i>Social and business impact</i> assessment for further information on the potential social and business related impacts from the construction and operation of the project.
To provide for equity within	The project (and the broader Geelong Energy Hub) would provide:
and between generations	<ul> <li>Continuity of a skilled workforce and economic development in the region</li> <li>Continued access to essential services, ensuring essential energy services (gas) are provided before electrified solutions become effective and excitate the problem of the provided before.</li> </ul>
	anordable and available thereby not exacerbating socio-economic gaps.
	Refer to Technical Report L: <i>Social and business impact assessment</i> for further information on the potential social and business impacts from the construction and operation of the project.

ESD objectives	Project actions
To protect biological diversity and maintain essential ecological processes and life- support systems	The EES has investigated the potential environmental impacts of the project and proposed mitigation measures to protect ecological processes. This has included assessing:
	• The nearby Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site – potential direct and indirect impacts on marine biota including, seagrass communities, plankton and larvae and infauna communities or waterbird food resources are unlikely with the adoption of mitigation measures and the major environmental enhancement of reusing the FSRU seawater discharge in the refinery as cooling water. Refer to Technical Report A: <i>Marine</i> <i>ecology and water quality impact assessment</i>
	• The terrestrial environment of the pipeline route – the proposed pipeline would be located in existing disturbed pipeline corridors and would cover a short distance (approximately 7 km) with few areas of ecological value and minimal impact on vulnerable or threatened species or communities. Refer to Technical Report D: <i>Terrestrial and freshwater ecology impact assessment</i>
	• The interdependence and interconnection of the terrestrial and marine environment, particularly potential impacts on the food chain for migratory waders and other waterbirds and incorporating considerations for biodiversity into the design.
	As described in <b>Section 15.3.1</b> , the project is planned to be developed on an historically disturbed, industrial site thereby limiting the need to build LNG infrastructure on greenfield sites. Furthermore, co-locating the gas terminal with the refinery offers synergies which minimise potential environmental impacts. For example, reuse of the FSRU discharge water for refinery cooling as described earlier results in the discharge from the project being an improvement on the existing refinery discharge in relation to temperature. The refinery has been discharging water through the current discharge points for more than 60 years providing an opportunity to assess health of the existing ecosystem as a baseline for assessing project impacts. The marine ecosystem offshore from the discharge quality form the project is highly unlikely to have adverse impacts on the marine environment.

CHAPTER 15

	ESD principles	Project actions
	Decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations	The project is transitional and capable of supplying a new source of gas for the south-east Australian gas market where there is a projected supply shortfall in coming years without the need to build long term gas infrastructure. Simultaneously, the project has the flexibility to adapt to the changing profiles in gas demand associated with the transition of the energy sector to a low-to-zero emission technology. The project would enable a secure, affordable and flexible energy supply during the transitional phase to more renewable energies.
		Furthermore, processes were established early to ensure sustainability considerations were embedded into the engineering and design. Sustainability was included as a key criterion for every major decision on the project (refer to <b>Section 15.3.3</b> ). This involved screening potential options against sustainability categories covering environmental, social and equity considerations, to identify and evaluate key sustainability differentiators between options. The outcomes of this were incorporated with other drivers (economic, schedule) into the overall decision outcome.
		End-of-life or secondary use considerations were given to all relevant infrastructure. For example, the pier was designed to outlive the design life of the project to reduce obsolescence/waste. Design has ensured that potential future uses of the infrastructure, including future technology and fuels, have remained as feasible options beyond the design life of the project. On project conclusion and the FSRU has departed port, the proposed Refinery Pier extension would be repurposed for other uses which could include future fuels.
	Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation	For all specialist studies, where information was not available, a pre- cautionary or 'worst-case' scenario was used in lieu of final operational data. Furthermore, the refinery has a long history of operation by Viva Energy, providing a catalogue of historic environmental data. Models and assumptions have been validated based on empirical evidence associated with refinery operations.
		To better understand the marine environment in the project area, 12 months of ecological surveys and sampling were undertaken in Corio Bay to establish baseline conditions over all seasons.
		A precautionary approach was also adopted for design responses to climate change risks and adaptation. The Intergovernmental Panel on Climate Change's (IPCC) Representative Concentration Pathways (RCPs) are designed to be 'representative' of possible future emissions and greenhouse gas concentration trajectories to the year 2100. There are four RCPs (RCP8.5, RCP6.0, RCP4.5 and RCP2.6). Recent data indicates that global greenhouse gas emissions are tracking in accordance with RCP8.5 (DELWP, 2015). RCP8.5 was therefore applied as a worst-case scenario for the basis of design.
		<b>Section 15.3.2</b> outlines the VIP process established for the project. Several design interventions were identified and incorporated into the FEED design; these voluntary measures, not only further prevent environmental degradation but maximise environmental outcomes. This process will continue, and any measures identified for future phases will be screened and pursued if found to have potential environmental benefits.

ESD principles	Project actions
The global dimension of environmental impacts of actions and policies should be recognised and considered	Viva Energy recognises the United Nations 2030 global agenda and Viva Energy's sustainability focus areas align with several of the UN SDGs, as described in <b>Section 15.2.1</b> . Viva Energy also recognises the complex global challenge posed by climate change and its role in the transition to a lower carbon economy. For this project, Viva Energy has committed to greenhouse gas emissions mitigation measures and offsets for residual Scope 1 and 2 emissions.
	Viva Energy also recognises the global nature of the supply chain and has established processes to embed sustainability considerations into procurement (refer to <b>Section 15.3.4</b> ). This broadly includes:
	<ul> <li>Sustainability expectations in early inquiry phases</li> <li>Sustainability questionnaires for vendors</li> <li>Establishing sustainability criteria for bid evaluation</li> <li>Establishing sustainability Key Performance Indicators in contract management.</li> </ul>
The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised	The project forms part of Viva Energy's vision to diversify future operations at the Geelong Refinery, with a visionary plan to transform the site into an Energy Hub. The Gas Terminal Project is at the centre of the plan to support Victoria's evolving energy needs. Other projects being investigated as part of the Geelong Energy Hub are described in <b>Section 15.2.3</b> .
	Processes for embedding sustainability considerations into procurement have been established, with recognition that this project is an opportunity to attract emerging or best-practice renewable/ sustainable technologies to the region (see <b>Section 15.3.4</b> ).
	In addition to attracting international best practice to the Geelong region, sustainable procurement practices will prioritise local content, thereby providing economic development and ongoing skilled workforce opportunities for the region.

ESD principles	Project actions
The need to maintain and enhance international competitiveness in an environmentally sound manner	The project is part of Viva Energy's Geelong Energy Hub vision to deliver long-term energy security by supporting current and future energy development projects that could be co-located alongside the Geelong Refinery, while working towards a net zero emissions future.
	The project addresses the predicted gas shortfall, providing energy security to south-eastern Australia without the need to develop large- scale pipeline networks between states. By offering a flexible supply, bringing gas from where it is produced in Australia or further afield to where it is needed, this project presents an efficient and temporary approach to fulfilling gas demand without creating a large-scale future decommissioning liability.
	The project demonstrates international competitiveness in an environmentally sound manner by proposing to locate the development in an historically industrialised area, thereby limiting the need to develop new infrastructure on greenfield sites elsewhere. Furthermore, by designing infrastructure to consider secondary use, the project demonstrates an opportunity to limit greenfield developments into the future as technology develops. By integrating the project with the refinery, Viva Energy is able to limit potential environmental impacts, such as the send-off of seawater through the refinery system before discharge back into the marine environment.
	The processes established for sustainable procurement ensure that international best practice options for procured goods are identified and implemented where practicable (see <b>Section 15.3.4</b> ).
Cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentive mechanisms	Sustainability considerations have been embedded into the engineering and design processes on the project. This included the establishment of VIP, a mechanism for identifying, screening and implementing value-improvement ideas into the design. As summarised in <b>Section 15.3.1</b> , 101 VIP ideas were identified by the end of the FEED study, with 60 of these having a potential positive sustainability outcome. Several of these were closed during FEED, including:
	• Significant reduction in dredge volume base case through optimisation
	• Wildlife sensitive lighting design: Minimises potential impacts of lighting on marine and terrestrial fauna
	• Material deletions.
	These improvements result in reductions in greenhouse gas emissions as well as potential environmental impacts associated with dredging.
	In addition, Viva Energy have committed to offsetting all Scope 1 and 2 emissions associated with the project. Offsetting effectively adds a price to greenhouse gas emissions and thus further incentivises greenhouse gas emission abatement or reduction opportunities through design, construction, or operational interventions. A range of mitigation measures to avoid and reduce emissions during the construction and operation of the terminal, are outlined in Technical Report C: <i>Greenhouse gas impact assessment</i> .

ESD principles	Project actions
Decisions and actions should provide for broad community involvement on issues which affect them	The Geelong Refinery is Viva Energy's largest facility with the operation employing over 700 people. The refinery and associated operations have been part of the local Geelong community since 1954 and proudly supplies more than half of Victoria's fuel needs. Each year more than \$200M in wages and services is injected into the local economy.
	For many years Viva Energy has provided operational updates to the community via local newspapers, Refinery Update newsletters, letter drops, social media, stakeholder and community meetings and briefings, as well as participation in local Geelong events.
	Viva Energy is very proud of its Community Program. In addition to the national Community Partners, Viva Energy also has partnerships with a range of local Geelong community organisations. These include Northern Futures and the Geelong Football Club. Refinery employees give generously to a range of local community organisations such as Give Where You Live.
	These existing networks enabled Viva Energy to identify groups and individuals who could be impacted by the project, would have an interest in the project, or would need to be engaged as part of the approvals processes. This has enabled the project team to engage with the community on issues which may affect them, leveraging on the community's understanding of refinery operations.
	For further details, refer to Chapter 6: <i>Stakeholder and community</i> engagement.